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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/539,872	03/31/2000	Ravin Balakrishnan	1252.1047	9242

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EXAMINER

WALLACE, SCOTT A

ART UNIT PAPER NUMBER

2672

DATE MAILED: 05/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/539,872

Applicant(s)

BALAKRISHNAN ET AL.

Examiner

Scott Wallace

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by ACM Symposium on Interactive 3D Graphics.

3. As per claim 1, ACM Symposium teaches a curve production system, comprising: a flexible handheld tape device comprising a flexible tape having relative position sensing elements spaced along the tape (column 3 lines 1-6), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 1-6); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 2, 4th paragraph).

4. As per claim 2, ACM Symposium teaches tape shape is dynamically adjustable and curve shape corresponds to the tape shape (column 3 lines 1-6).

5. As per claim 3, ACM Symposium teaches the curve is part of a surface and a shape of the surface corresponds to the curve shape (column 9 paragraph 6).

6. As per claim 4, ACM Symposium teaches a scene includes an anchor curve and the tape curve drags out a surface shape from the anchor curve responsive to movement of the flexible tape (column 9 paragraph 4).

7. As per claim 5, ACM Symposium teaches the surface is created by interpolation between the anchor curve and the tape curve (column 9 paragraph 4).

8. As per claim 6, ACM Symposium teaches the tape curve sets an object profile curve (pg. 115 fig. 6).

9. As per claim 7, ACM Symposium teaches the tape curve provides a path to drag out an object shape along the profile curve (pg. 115 fig 6).

10. As per 8, ACM Symposium teaches the tape curve sets a path curve (column 9 paragraph 4).

11. As per claim 9, ACM Symposium teaches the tape curve specifies a surface shape along the path curve (column 9 paragraphs 4 and 5).
12. As per claim 10, ACM Symposium teaches the flexible curve provides a profile and an object is created by revolving the profile curve in a scene (column 9 paragraph 1).
13. As per claim 11, ACM Symposium teaches the tape curve is a spline curve and the relative tape positions are used as control points of the tape curve (pg. 117 column 2 conclusion).
14. As per claim 12, ACM Symposium teaches a world position sensor attached to the flexible tape and providing a three dimensional world position of the tape and said curve generation system positions the tape curve in a virtual scene in correspondence to the world position (pg. 112 column 1 paragraph 5).
15. As per claim 13, ACM Symposium teaches said world position sensor senses three dimensional world orientation of said world sensor and said curve generation system positions the tape curve in a virtual scene in correspondence to the world orientation. (pg. 112 column 1 paragraph 5).
16. As per claim 14, ACM Symposium teaches a command input device producing an input command and said curve generation system controls the tape curve responsive to the input command (pg. 112 column 2 paragraphs 2 and 3).
17. As per claim 15, ACM Symposium teaches command input device comprises one of a foot pedal, a foot mouse, buttons on a position locator and a portion of the flexible tape (pg. 112 column 1 paragraph 6 and column 2 paragraphs 1-3).
18. As per claim 16, ACM Symposium teaches a system, comprising: a flexible handheld tape device comprising a flexible tape having relative position sensing elements spaced along the tape and producing relative tape positions to a reference position sensing element of the tape (pg. 112 column 1 paragraph 1); and an animation system using the relative positions as a command (pg. 117 column 2 paragraph 7).
19. As per claim 17, ACM Symposium teaches a shape of the input device flexible tape indicates a command (pg 112 column 1 paragraph 5).
20. As per claim 18, ACM Symposium teaches an end portion of the flexible tape is used for input command gestures (pg 112 column 2 paragraph 2).

21. As per claim 19, ACM Symposium teaches an end portion of the flexible tape is used for a cursor control command (pg. 116 column 2 paragraph 3).
22. As per claim 20, ACM Symposium teaches an end portion of the flexible tape is used for a selection control command (pg. 116 column 2 paragraph 3).
23. As per claim 21, ACM Symposium teaches a system user drops curves in a scene responsive to tape curve position and the input command (pg. 113 column 2 paragraph 1).
24. As per claim 22, ACM Symposium teaches a system comprising: a flexible handheld tape device comprising a flexible tape having relative position sensing elements spaced along the tape and producing relative tape positions relative to a reference position sensing element of the tape (pg. 112 column 1 paragraph 1); and editing system editing one of curves and surfaces responsive to the relative position (pg. 111 column 2 paragraph 4).
25. As per claim 23, ACM Symposium teaches a virtual scene includes a scene curve and said curve generation system edits the scene curve responsive to the tape curve (pg. 112 column 1 paragraph 5 and column 2 paragraph 5).
26. As per claim 24, ACM Symposium teaches a scene includes a wire curve and the tape curve controls the wire curve (pg. 115 column 1 paragraphs 6 and 7).
27. As per claim 25, ACM Symposium teaches the flexible tape comprises twist sensors and the wire curve is twisted in correspondence to the tape curve responsive to twist of the flexible tape (pg. 115 column 1 paragraphs 6 and 7 and column 2 paragraph 1).
28. As per claim 26, ACM Symposium teaches a scene includes a wire curve and a wire reference curve and the tape curve controls the wire curve and the wire reference curve (pg. 115 column 1 paragraphs 6 and 7 and column 2 paragraph 1).
29. As per claim 27, ACM Symposium teaches a scene includes a scene curve and the scene curve is snapped to a shape of the tape curve (pg. 116 column 1 paragraph 3).
30. As per claim 28, ACM Symposium teaches said curve generation system comprises a user controllable gain controlling relative positions of the tape curve responsive the relative positions of the flexible tape (pg. 116 column 1 paragraph 4).

31. As per claim 29, ACM Symposium teaches said tape curve is displayed egocentrically to the user in a scene in which the tape curve is interacting within changes in viewpoint (pg. 116 column 1 paragraph 6).
32. As per claim 30, ACM Symposium teaches the flexible tape comprises a physical constraint comprising one of a substitutable mechanical stiffness member, a physical position lock and a shape retaining member (pg. 113 column 2 paragraph 4).
33. As per claim 31, ACM Symposium teaches the tape curve dynamically controls curves in a dynamic scene responsive to the flexible tape (pg. 115 column 1 paragraph 5).
34. As per claim 32, ACM Symposium teaches the flexible tape is conformed to a shape of a physical object and the tape curve comprises an input of the shape (pg. 117 column 1 paragraph 5).
35. As per claim 33, ACM Symposium teaches said device includes subsection specification sensors and said tape curve shape is responsive to subsection shape (pg. 116 column 1 paragraph 3).
36. As per claim 34, ACM Symposium teaches a two-dimensional surface upon which said device rest and upon which surface a shape of said device is changed; and a world position input device specifying a world position of the tape curve (pg. 117 column 2 paragraph 4 and pg. 112 column 1 paragraph 5).
37. As per claim 35, ACM Symposium teaches a flexible handheld tape device comprising a dynamically shape adjustable flexible tape having relative position sensing elements spaced along the tape and producing relative tape positions relative to a reference position sensing element of the tape (pg. 112 column 1 paragraph 1); a curve generation and editing system producing a smooth spline tape curve using the relative positions of the tape curve corresponding to the dynamically adjusted shape and producing a shape of a surface when the tape curve drags out a surface shape from an anchor curve responsive to movement of the flexible tape (pg. 114 column 2 paragraph 1 and 2); and a world position sensor attached to the flexible tape and providing a three dimensional world position and orientation of the tape and said curve generation system positioning the tape curve in a virtual scene in correspondence to the world position and orientation (pg. 112 column 1 paragraph 5); and with said tape device acting as command input device producing an input command and said curve generation system

controlling and editing the tape curve responsive to the input command and a shape of the tape curve (pg. 116 column 2 paragraph 2).

38. As per claim 36, ACM Symposium teaches a flexible tape device producing shape, twist and six degrees of freedom position information; and display means displaying a virtual curve having a shape, a twist and a position corresponding to the shape, twist and six degrees of freedom position information (pg. 112 column 1 paragraphs 4 and 5 and pg. 115 column 1 paragraph 6).

39. As per claim 37, ACM Symposium teaches adjusting a shape of a flexible tape; and producing a virtual curve using the flexible tape as control points of a non-uniform rational B-spline curve (pg. 116 column 1 paragraph 5).

40. As per claim 38, ACM Symposium teaches a computer readable storage controlling a computer and comprising a process of inputting a shape of a flexible tape and controlling a non-uniform rational B-spline curve responsive to the shape (pg. 116 column 1 paragraph 5 and pg 111 column 1 paragraph 4).

41. As per claim 39, ACM Symposium teaches a graphical user interface comprising a virtual non-uniform B-spline tape curve manipulable in a scene responsive to a physical flexible tape (pg. 116 column 1 paragraph 5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Scott Wallace** whose telephone number is **703-605-5163**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Michael Razavi**, can be reached at 703-305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, .
Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

A handwritten signature in black ink, appearing to read 'Michael Razavi', with a long horizontal flourish extending to the right.

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600